The Current Outbreak of Rabies in Northern Peninsular Malaysia: The Do’s and Don’ts

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2. KUMULATIF SURVELAN WABAK PENYAKIT RABIES TAHUN 2015

<table>
<thead>
<tr>
<th>BIL</th>
<th>PERKARA</th>
<th>NEGERI PERLIS</th>
<th>NEGERI KEDAH</th>
<th>NEGERI PULAU PINANG</th>
<th>JUMLAH</th>
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<tbody>
<tr>
<td>1</td>
<td>Bil anjing yang divaksin</td>
<td>499</td>
<td>1,686</td>
<td>433</td>
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<tr>
<td>2</td>
<td>Bil anjing yang dileson</td>
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<td>Bil anjing yang menunjukkan tanda-tanda penyakit anjing gila (klinikal)</td>
<td>25</td>
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<td>Bil pemilik anjing</td>
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<td>Bil premis yang dibanci dan disurvelelksan</td>
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<td>6</td>
<td>Bil anjing yang telah dimusnahkan</td>
<td>297</td>
<td>1,625</td>
<td>1253</td>
<td>3,175</td>
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<td>7</td>
<td>Bil sampel otak anjing yang diambil (gigitan dan surveilan)</td>
<td>65</td>
<td>69</td>
<td>77</td>
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<td>8</td>
<td>Bil sampel otak anjing dui positif (gigitan)</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>11</td>
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<tr>
<td>9</td>
<td>Bil sampel otak anjing dui positif (survelelksan)</td>
<td>13</td>
<td>17</td>
<td>1</td>
<td>31</td>
</tr>
<tr>
<td>10</td>
<td>Bil orang yang digigit anjing</td>
<td>35</td>
<td>32</td>
<td>111</td>
<td>178</td>
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<td>11</td>
<td>Bil kompon kesedaran yang telah dijalankan</td>
<td>13,183</td>
<td>1,720</td>
<td>246</td>
<td>15,149</td>
</tr>
</tbody>
</table>

3. Langkah-langkah kawalan yang diambil oleh pihak DVS adalah:

   I. Memberi kesedaran awam seperti menggalakkan pemilik haiwan mengurung haiwan mereka didalam kawasan rumah.

   II. Meningkatkan immuniti haiwan peliharaan utama anjing

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Rabies in Other Animals

Rabies

How it spreads

ANIMAL BITE: The farther away from brain, the longer virus takes to spread

VIRUS: Spreads through central nervous system

Common carriers of rabies

Infected animals: Show no fear for humans; act very agitated

Dog: Another common rabies source

Symptoms in humans

- Fever, depression
- Agitation
- Painful spasms followed by excessive saliva
- Death within a week without vaccine

Treatment: Hospitalization, immune globulin injections, anti-rabies vaccine

Foaming at mouth after drinking: Produced by spasms in throat

Horses, cattle, ponies, cats, elephants,
Dog biting Human: Disease Transmission

1. Virus enters tissue from saliva of biting animal
2. Virus replicates in muscle near bite
3. Virus moves up peripheral nervous system to CNS in spinal cord
4. Virus ascends spinal cord
5. Virus reaches brain and causes fatal encephalitis
6. Virus enters salivary glands and other organs of victim
7. Virus spread along nerves to salivary glands, skin, cornea, and other organs. Saliva is infectious for up to two weeks before signs appear.
8. Infection of brain neurons.
Dog Rabies: Symptoms

- The infection of virus are divided into 3 stages: prodromal, furious (excitative) and paralytic.

  Prodromal stage: Can last up to 6 months long as the virus slowly spreads over the nervous systems and travel to the brain. During this period infected dog sometime may not show any signs or symptoms at all.
Furious (excitative) stage:

- May last for **several days (usually 2-4 days)** after the prodromal stage however not all dogs experience this stage.

- This is the **most dangerous period because infected dog can spread rabies disease.**
- **Paralytic stage:**
  
  last for 2-4 days and the symptoms are as follows:
  
  - Choking
  - Dropping of the lower jaw
  - Unable to swallow any food
  - Foaming at the mouth
  - Paralysis of jaw, throat and chewing muscles

- After the paralytic stage infested dogs will *usually be in coma*.
- Respiratory problems and failure then dies.
- Extremely mean and aggressive
- Totally uncontrollable
- Break it own teeth by biting objects
- Constant growling
- Biting
- Dilated pupils
- Restless
- Disorientation
- Seizures
Rabies in Humans

- The incubation period is variable (the site and severity of the bite), but averages three to eight weeks (3-8 wks).

- Following an exposure to rabies, there is normally a window of opportunity (usually measured in days) in which the patient can receive a series of shots to keep him/her from developing disease.

- Once symptoms begin, the outcome is almost always death.
Human Rabies: Symptoms

Early symptoms of rabies often include:

- **Sensory changes** at the site of the bite (numbness or tingling)
- **Fever**
- **Headache**
- **General feeling of discomfort**
As the infection progresses, the patient may exhibit:

- Excitebility
- Anxiety
- Aerophobia (abnormal aversion to air in motion)
- Hydrophobia (abnormal fear of water).
Other neurological symptoms may include:

- Mental confusion
- Paralysis
- Delirium
- Convulsions

Without medical intervention, DEATH usually occurs within two to six days.
## Rabies - Newspaper Cuttings

**New Straits Times**

<table>
<thead>
<tr>
<th>No</th>
<th>Date</th>
<th>Caption</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>18th Sept 2015</td>
<td>‘Rabies alert as Outbreak spreads from Perlis to Kedah and Penang’</td>
</tr>
</tbody>
</table>
| 2  | 19th Sept 2015 | ‘Penang culls strays to curb rabies’  
‘Action taken to prevent spread of wild infection’                                                                                           |
| 3  | 20th Sept 2015 | ‘Woman bitten by rabid dog free of disease’  
‘Perak to ensure outbreak doesn't spread says Zamri’  
‘Keep clean at all times, says D-G’  
‘Ensuring 600 strays stay rabies-free-Dog Shelter: Mak Intan vaccinates, monitor them’  
‘200 dogs put to sleep since Tuesday’                                                                                                       |
| 4  | 21st Sept 2015 | ‘Stray dogs should be neutered, not culled’  
(Letter to editor)                                                                                                                             |
| 5  | 22nd Sept 2015 | ‘CM slammed over dog cull-Rabies: NGO’s canine lovers appalled by Penang govt’s move’                                                                                                            |
| 6  | 23rd Sept 2015 | ‘Ear-tipping move lauded-Rabies control: It can identify strays that have been neutered’  
‘Dogs from Thailand likely to cause outbreak’  
Minister: No one infected with rabies’                                                                                                       |
<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Content</th>
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</table>
| 7.  | 25th Sept 2015 | ‘Penang to get more anti-rabies vaccine-Shortage: 300 doses from other states expected to run out this week’  
‘Perform mass vaccinations to curb outbreak, says SPCA’  
‘Dog culling opposer has change of heart after being bitten by canine’ |
| 8.  | 26th Sept 2015 | ‘Vaccination is better than culling’ (Letter to Editor-SPCA) |
| 9.  | 27th Sept 2015 | ‘See how strays attack humans’ (Letter to Editor)  
‘To cull or vaccinate’ (Editorial) |
| 10. | 28th Sept 2015 | ‘Rabies outbreak under control-Measures: No new cases reported in Penang last week, says dept’ |
| 11. | 29th Sept 2015 | ‘Vaccination a better measure by far’ (Letter to Editor-Ending Inhumane Culling campaigners for World Animal Protection)  
‘Caretaker begs CM to stop culling dogs’  
‘Culling increased as more dog bite cases reported’ |
| 12. | 30th Sept 2015 | ‘Greedy Industry breeds unwanted pets’ (Letter to Editor-Sahabat Alam Malaysia) |
‘Netizens accuse Guan Eng of ‘cooking’ and ‘eating dogs’’ |
<table>
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<th>Date</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>21&lt;sup&gt;st&lt;/sup&gt; Sept 2015</td>
<td>‘Killing of dogs won’t help’ (Letter to Editor)</td>
</tr>
<tr>
<td>2.</td>
<td>22&lt;sup&gt;nd&lt;/sup&gt; Sept 2015</td>
<td>‘Animal activist begs halt to culling of stray dogs-I love Penang like I love the dogs and this is my home’</td>
</tr>
<tr>
<td>3.</td>
<td>27&lt;sup&gt;th&lt;/sup&gt; Sept 2015</td>
<td>‘Lim hits back at critics; Penang CM defends culling move to protect lives’</td>
</tr>
<tr>
<td>4.</td>
<td>29&lt;sup&gt;th&lt;/sup&gt; Sept 2015</td>
<td>‘Vaccination the answer’ (Letter to Editor-SPCA)</td>
</tr>
<tr>
<td>No</td>
<td>Date</td>
<td>Caption</td>
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<tr>
<td>1.</td>
<td>22\textsuperscript{nd} Sept 2015</td>
<td>‘More bitten-Govt order 50,000 doses of rabies vaccine to contain outbreak in northern states’  ‘Penang doing its best to contain outbreak’</td>
</tr>
<tr>
<td>2.</td>
<td>23\textsuperscript{rd} Sept 2015</td>
<td>‘No victim’ of rabies so far-12 bitten by rabid dogs do not have symptoms, says Subra’  ‘Mass vaccination must be costly’</td>
</tr>
</tbody>
</table>
Why a 10-Day Quarantine?

- An animal that has bitten a human or another domestic animal must undergo a mandatory 10-day quarantine period.
- This quarantine can be carried out in an approved animal control facility.
- May allow the quarantine to be carried out at the owner’s home.
- The quarantine is set at 10 days because a rabies-infected animal can only transmit the disease after clinical signs have developed AND once these signs have developed, the animal will die within 10 days.
- If the animal lives beyond the 10th day, the animal is not shedding the rabies virus at the time that the bite occurred.
- If the animal dies before the 10th day, post mortem must be conducted to confirm the Negris bodies.
- If the test is positive, a human bite victim will receive post-exposure vaccinations.
Why a Six-Month Quarantine?

- Unvaccinated domestic animal that has been bitten by a wild animal or that has received a suspected bite wound of unknown origin must undergo a six-month rabies quarantine.

- Quarantine be carried out in an approved animal control facility at the owner’s expense.

- Because the incubation period for rabies is usually less than six months, this quarantine period is meant to ensure that the animal does not have rabies before the animal is allowed to once again come into regular contact with humans and/or other animals again.

- If an owner is unable to comply with this law or cannot afford to pay for the mandatory six-month quarantine, the only alternative for the pet is mandatory euthanasia and testing for rabies.

- Keeping your pet’s rabies vaccination up-to-date will help to ensure that he never needs to be quarantined for six months, even if he is bitten by a wild animal.
Tips for Protecting You and Your Pets

- Keep your pet’s rabies vaccine up-to-date.

- Puppies and kittens should receive their first rabies vaccination at 12 weeks of age.

- Pets must be vaccinated again in one year, and then a three-year rabies vaccine is generally administered during the rest of your pet’s life.

- Animal humane societies offer free or low-cost vaccinations.

- Keep your pet’s rabies vaccination certificate in an accessible location.

- If your pet bites a person or another animal, consult your veterinarian immediately.
- If your pet is bitten by another known domestic animal, consult your veterinarian immediately and ask the owner to provide proof of rabies vaccination.
- If the other animal is not up-to-date on the rabies vaccine ensure that the animal is quarantined.
- If your pet receives a suspected bite wound from an unknown animal or if your pet comes in direct contact with any wild animal, even if no wounds are evident, consult your veterinarian immediately.
- Your veterinarian may recommend a rabies booster.
- If you are scratched or bitten by any animal, either wild or domestic, consult your physician immediately.
Reducing Your Risk of Getting Rabies from Wildlife

- Don’t keep wild animals as pets.
- Avoid direct contact with wildlife, dead or alive. Never touch any wildlife with your bare hands.
- Avoid animals displaying unnatural behavior. Wild animals that are unusually friendly or displaying other unnatural behaviors may have the rabies virus or other potential zoonotic diseases.
- Discourage contact between pets and wildlife.
- Don’t let your pets roam or encourage them to interact with unfamiliar domestic or wild animals.
- Feed your pets indoors. Leaving food outside often attracts stray dogs, cats and wildlife to premises.
- Animal-proof trash. Make sure your trash lids are locked, and don’t leave bags of garbage outside the cans.
- Prevent wild animals from getting into the house.
What Pet Owners Should Know?

- Education and raising awareness on rabies (Pet and zoonotic diseases)
- Dog bite management
- Responsible ownership along with appropriate legislation and enforcement
- Mass Vaccination Campaign
- Spaying and neutering
Control of Rabies in Dogs

- Dog culling alone is not effective
- Mass vaccination campaigns have been the most effective measure
- High vaccination coverage (70% or higher) can be attained
- Surveillance of rabies outbreak
- Veterinary surveillance of rabies and laboratory investigations with confirmatory results
- Rabies control activities in all levels of the health services
Principles of Disease Control

1. Separating the infected and non-infected
2. Culling of infected animals (Avians)
3. Laboratory investigations and confirmation of the disease
4. Prevention and control (Vaccination and public awareness)
5. Pre-exposure vaccination should be offered to persons in high-risk groups, (veterinarians, animal handlers, and laboratory workers)
Diagnosis in animals and humans

Diagnosis in animals
• A diagnosis of rabies can be made after detection of rabies virus from the brain stem and cerebellum.

Diagnosis in humans
• Several tests are necessary to diagnose rabies ante-mortem (before death) in humans;
• No single test is sufficient.
• Tests are performed on samples of saliva, serum, spinal fluid, and skin biopsies.
• Saliva can be tested by virus isolation or reverse transcription followed by polymerase chain reaction (RT-PCR).
• Serum and spinal fluid are tested for antibodies to rabies virus.
• Skin biopsy specimens are examined for rabies antigen in the cutaneous nerves at the base of hair follicles.
1903, Dr. Adelchi Negri reported the identification of what he believed to be the etiologic agent of rabies, the Negri body.

He described Negri bodies as round or oval inclusions within the cytoplasm of nerve cells of animals infected with rabies.

Negri bodies may vary in size from 0.25 to 27 μm.

Frequently in the pyramidal cells of Ammon's horn, and the Purkinje cells of the cerebellum.

Also found in the cells of the medulla and various other ganglia neurons of the salivary glands, tongue, or other organs.

Staining with Mann's, giemsa, or Sellers stains can permit differentiation of rabies inclusions from other intracellular inclusions.

With these stains, Negri bodies appear magenta in color and have small (0.2 μm to 0.5 μm), dark-blue interior basophilic granules.
Neuron without Negri bodies

Negri body in infected neuron

Enlargement of a Negri body in Sellers stained brain tissue

Source: CDC
The DFA test is the "gold standard" diagnostic method for rabies

Source: CDC
History of Rabies Diagnosis in Malaysia

- 1st in IMR, KL (both for animals & humans)
- 2nd in VRI, Ipoh under the leadership of Dato’ Anuar Hassan
- Thereafter, rabies diagnosis for animals done at VRI following the WHO Guidelines
- Malaysia currently loses Disease Freedom (World Organisation for Animal Health - OIE)
- 1999, outbreak in Malaysia
- 2012, Malaysia declared rabies free
- It took Malaysia 13 years to achieve rabies free status
- When will OIE give Malaysia status free of rabies?
QUESTIONS TO BE ANSWERED

1. What happens when a rabid dog bites the other animals (Cat, Goat, Sheep, Cattle – Farm Animals, Exotic and Wild animals)?
2. Why no human cases reported?
3. Do the positive dog brain samples need an second opinion on the diagnosis?
4. Will the DVS fix the price for vaccinating the dogs? (ranges from RM 90 – RM 500 in the private)
5. Is there lack of quarantine facilities in the local councils/municipals?
<table>
<thead>
<tr>
<th>Cat Vaccine</th>
<th>Initial Kitten Vaccination (at or under 16 weeks)</th>
<th>Initial Adult Cat Vaccination (over 16 weeks)</th>
<th>Booster Recommendation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rabies</td>
<td>Single dose as early as 8 weeks of age, depending on the product. Revaccinate 1 year later.</td>
<td>2 doses, 12 months apart</td>
<td>Required annually or every 3 years, depending on vaccine used. State regulations may determine the frequency and type of booster required.</td>
<td>Core cat vaccine. Rabies is 100% fatal to cats, with no treatment available. Prevention is key</td>
</tr>
<tr>
<td>Dog Vaccine</td>
<td>Initial Puppy Vaccination (at or under 16 weeks)</td>
<td>Initial Adult Dog Vaccination (over 16 weeks)</td>
<td>Booster Recommendation</td>
<td>Comments</td>
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<tr>
<td>Rabies 1-year</td>
<td>Can be administered in one dose, as early as 3 months of age. States regulate the age at which it is first administered.</td>
<td>Single dose</td>
<td>Annual boosters are required.</td>
<td>Core dog vaccine. Rabies is 100% fatal to dogs, with no treatment available. Prevention is key.</td>
</tr>
<tr>
<td>Rabies 3-year</td>
<td>Can be administered as one dose, as early as 3 months of age. States regulate the age at which it is first administered.</td>
<td>Single dose</td>
<td>A second vaccination is recommended after 1 year, then boosters every 3 years.</td>
<td>Core dog vaccine.</td>
</tr>
</tbody>
</table>
Acknowledgement

- Prof Dr Aishah Adam, Dean Faculty of Pharmacy, UiTM Puncak Alam.
- Nur Khairiyah bt Abdul Rahman, Faculty of Health Sciences, UiTM Puncak Alam.
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- Dr K.S.Kesavanarayanan, Postdoctoral Researcher, UiTM Puncak Alam.
- Department of Veterinary Services Malaysia
Rabies Kills!
Vaccinate Your Dog Today!!!
One should doubt in experiments until the facts do not force to give up any doubts

~ Louis Pasteur ~

When Louis Pasteur was working on the Rabies vaccine, if he or his assistants got infected, it was instructed that they were to be shot in the head.
The greatness of a nation and its moral progress can be judged by the way its animals are treated.

Mahatma Gandhi
Indian Political Leader
(1869-1948)

We are largely the same

Respect all equally

THANK YOU 4 UR ATTENTION